REMARKS

Claims 26 to 56 are pending and presently under examination. Claim 26 has been amended as discussed below.

Regarding the amendment to claim 26

Claim 26 has been amended for the sake of clarity by deleting the word nucleotide from the phrase "nucleotide portion." Claim 26 now recites "a portion of SEQ ID NO: 1." The amendment to claim 26 does not alter the scope of the claim and does not add new matter. Applicants respectfully request entry of the amendment.

Attached hereto as Appendix A is a marked-up version of the amended claim showing specific text changes made in the enclosed amendment using bracketing to indicate deleted text.

Regarding rejections under 35 U.S.C. § 112, second paragraph

The rejection of claims 26 to 56 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite is respectfully traversed. The Office Action asserts several grounds for rejecting the claims under 35 U.S.C. § 112, second paragraph. In particular, it is asserted that the phrase "at least...amino acids" is unclear, that the phrase "comprising a nucleotide portion" is improper, and that various claims are essentially equivalents of one another. For the reasons that follow,

Applicants submit that the claims meet the requirements of 35 U.S.C. § 112, second paragraph.

Regarding the phrase "at least ... amino acids"

The Office Action indicates that the phrase "at least ... amino acids" is unclear because the specification allegedly does not provide a standard for ascertaining the degree of the phrase. Specifically, the Office Action alleges that the skilled artisan would not reasonably be apprized of the scope of the invention since the array of polynucleotides claimed is too vast to envisage.

Applicants note that claims 28, 30, 31, 33, 34, 36, 38, 43, 45, 46, 48, 49, 51, and 53 do not recite the phrase "at least ... amino acids." Therefore, this ground of rejection will be addressed with regard to claims 26, 27, 29, 32, 35, 37, 39 to 42, 44, 47, 50, 52, and 54 to 56.

Applicants submit that claim 26 and dependent claims 27, 29, 32, 35, 37, 39 to 41 are definite with regard to the phrase "at least ... amino acids" because there is a finite number of portions of SEQ ID NO: 1 which can be included in the claimed nucleic acid molecule and because the sequence of these portions can be readily determined by one skilled in the art. As an example, independent claim 26 is directed to an isolated nucleic acid molecule containing a portion of SEQ ID NO: 1 which encodes at least 3 amino acids of SEQ ID NO: 2. The nucleotide sequence of SEQ ID NO: 1 and the amino acid sequence of SEQ ID

NO: 2 recited in claim 26 are provided in Figure 1A of the specification, which shows that the full length of SEQ ID NO: 2 is 100 amino acids. In view of the phrase "at least 3 amino acids," claim 26 clearly encompasses nucleic acid molecules containing a portion of SEQ ID NO: 1 encoding exactly 3 amino acids of SEQ ID NO: 2, a portion of SEQ ID NO: 1 encoding exactly 4 amino acids of SEQ ID NO: 2, a portion of SEQ ID NO: 1 encoding exactly 5 amino acids of SEQ ID NO: 2, ..., etc., as well as nucleic acid molecules containing a portion of SEQ ID NO: 1 encoding all 100 amino acids of SEQ ID NO: 2.

It is clear to the skilled artisan that, where the portion of SEQ ID NO: 1 encodes exactly 3 amino acids of SEQ ID NO: 2, 98 different amino acid sequences can be encoded, i.e., residues 1 to 3, 2 to 4, 3 to 5, ..., and 98 to 100 of SEQ ID NO: 2. Similarly, where the portion of SEQ ID NO: 1 encodes exactly 4 amino acids of SEQ ID NO: 2, 97 different amino acid sequences can be encoded, i.e., residues 1 to 4, 2 to 5, 3 to 6, ..., and 97 to 100 of SEQ ID NO: 2. In the same manner, where the portion of SEQ ID NO: 1 encodes 99 amino acids of SEQ ID NO: 2, there are only 2 different amino acid sequences that can be encoded, i.e., residues 1 to 99 and 2 to 100 of SEQ ID NO: 2, and where the portion of SEQ ID NO: 1 encodes 100 amino acids of SEQ ID NO: 2, there is a single amino acid sequence that can be encoded, i.e., full-length SEQ ID NO: 2. Thus, as the length of the portion of SEQ ID NO: 1 increases, the number of different amino acid sequences encoded by the portion decreases accordingly. In view of the above, the skilled person

understands that, for claim 26, the total number of different encoded amino acid sequences of SEQ ID NO: 2 is the sum of 98, 97, 96, 95, ..., 3, 2 and 1, a total of less than 5000 different amino acid sequences. Similarly, there also are less than 5000 different portions of SEQ ID NO: 1 that can be included within the nucleic acid molecule of claim 26. While this number may be considered large, it is not infinite or indefinite.

Breadth is not, of itself, a proper basis for finding claims indefinite, *see, for example, In re Miller,* 169 U.S.P.Q. 597 (CCPA 1971). Rather, the appropriate standard for determining definiteness of a claim is whether one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification, *see, for example, Seattle Box Co., Inc. v. Industrial Crating & Packing, Inc.*, 221 U.S.P.Q. 568 (Fed. Cir. 1984). In view of the analysis set forth above, it is clear that the skilled artisan can determine which nucleic acid molecules are encompassed by claim 26. Accordingly, claim 26 meets the standard for definiteness. In a similar manner, the skilled artisan also can determine which nucleic acid molecules are encompassed by each of dependent claims 27, 29, 32, 35, 37, 39 to 41.

Applicants further submit that claim 42 and dependent claims 44, 47, 50, 52, and 54 to 56 also are clear and definite. Independent claim 42 is directed to a nucleic acid molecule which contains a nucleic acid sequence encoding at least 5 amino acids of SEQ ID NO: 2. In view of the discussion above, it is clear that various amino acid sequences of SEQ ID NO: 2 having "at

least 5 amino acids" can be readily determined. Furthermore, in view of the genetic code and the limited amount of redundancy in the triplets encoding each amino acid, the skilled artisan also can determine the sequence of nucleic acid sequences encoding at least 5 amino acids of SEQ ID NO: 2. In a similar manner, the skilled artisan can determine which nucleic acid molecules are encompassed by each of dependent claims 44, 47, 50, 52, and 54 to 56. Accordingly, Applicants maintain that claims 42, 44, 47, 50, 52, and 54 to 56 are clear and definite.

In sum, each of the rejected claims is clear and definite. Applicants therefore respectfully request the Examiner remove this ground of rejection.

Regarding the term "nucleotide portion"

The Office Action indicates that the phrase "comprising a nucleotide portion" is improper on the basis that a portion of a nucleotide [N-O-P_3^{2-}] results in an incomplete nucleotide rather than a portion of a nucleic acid molecule. Applicants note that claims 42 to 56 do not refer to a nucleotide portion. The rejection therefore has been addressed with regard to claims 26 to 41. Claim 26 has been amended to recite a nucleic acid molecule comprising a "portion of SEQ ID NO: 1" that encodes at least three amino acids of SEQ ID NO: 2. Applicants submit that the meaning of the term "portion" is clear and respectfully request that this ground for rejection be removed.

Regarding the alleged equivalency of the claims

The Office Action asserts that various claims are equivalent to one another on the basis that the claims refer to overlapping products.

Applicants submit that the scope of each of the claims is different and that the claims are therefore not equivalent. As an example, claim 26 is directed to an isolated nucleic acid molecule containing a portion of SEQ ID NO: 1 which encodes at least 3 amino acids of SEQ ID NO: 2. Dependent claim 27 is directed to an isolated nucleic acid molecule containing a portion of SEQ ID NO: 1 which encodes at least 5 amino acids of SEQ ID NO: 2. While all of the nucleic acid molecules of claim 27 are encompassed by claim 26, it is clear that claim 26 additionally includes nucleic acid molecules containing portions of SEQ ID NO: 1 that encode only 3 amino acids of SEQ ID NO: 2 or only 4 amino acids of SEQ ID NO: 2; such nucleic acid molecules are not encompassed by claim 27, indicating that the two claims differ in scope. Similarly, the scope of each of claims 26 to 56 differs from one another. In sum, the claims are not equivalents because they differ in scope.

Having addressed each of the several grounds for rejection, Applicants submit that claims 26 to 56 comply with the requirements of 35 U.S.C. § 112, second paragraph, and request removal of this rejection.

CONCLUSION

In light of the amendments and remarks herein, Applicants submit that the claims are now in condition for allowance and respectfully request a notice to this effect. Should the Examiner have any questions, she is invited to call the undersigned agent or Cathryn Campbell.

Respectfully submitted,

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Date

Kimberly J. Prior
Registration No.: 41,483
Telephone No. (858) 535-9001
Facsimile No. (858) 535-8949

CAMPBELL & FLORES LLP
4370 La Jolla Village Drive
7th Floor
San Diego, California 92122
USPTO CUSTOMER NO. 23601

APPENDIX A

26. (Amended) An isolated nucleic acid molecule, comprising a [nucleotide] portion of SEQ ID NO:1, said [nucleotide] portion encoding at least 3 amino acids of SEQ ID NO:2.